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**PATENT SPECIFICATION**



Application Date: March 26, 1927. No. 8328/27.

Complete Left: May 4, 1927.

Complete Accepted: Jan. 26, 1928.

**PROVISIONAL SPECIFICATION.**

**Improvements relating to Shaft Couplings.**

I, ARCHIBALD JAMES WOODWARD, a British subject, of 1, Crystal Street, in the City and County of Kingston-upon-Hull, do hereby declare the nature of this invention to be as follows:—

The present invention relates to shaft couplings, and more particularly to couplings employed in internal combustion engines, for the purpose of coupling the magneto to its driving shaft.

The object of the invention is to provide an improved coupling which incorporates an "advance" and "retard" movement for the magneto thereby dispensing with the mechanism now employed for that purpose.

The coupling consists of two bosses preferably similarly shaped, one adapted to be attached to the magneto shaft by means of a tapered hold engaging a taper on the end of the shaft, and the other adapted to be attached by suitable means to the end of the driving shaft for the magneto. Each boss is preferably recessed to allow of the ready removal from the shafts of nuts, holding such bosses on the shafts.

The boss on the magneto shaft is conveniently provided on its outer periphery with one or more keys or alternatively it may be splined, the inner periphery of a sleeve being provided with corresponding keyways or splines whereby the said sleeve may be longitudinally displaced relatively to said boss.

The boss on the driving shaft is provided at a point on its periphery with a

stud or projection which engages within a slot in the position of the sleeve which encircles the said boss, such slot being inclined to the axis of the sleeve.

By the longitudinal displacement of the sleeve on the boss on the magneto shaft angular relative displacement of the driving shaft is thereby caused and the relative angular positions of the bosses and consequently the shafts are adjusted to a degree commensurate with the longitudinal displacement.

This means enables the cam of the magneto to remain stationary and thus the magneto is always discharging its spark at the most intense point of the armature thereby ensuring that the maximum efficiency of the magneto is obtained.

It is obvious that the arrangement of the bosses on the shafts is capable of variation, for example the boss provided with the keys or splines may be arranged on the driving shaft and its fellow boss may then be arranged on the magneto shaft, whilst if desired the boss on the driving shaft may be in the form of a cup or sleeve of increased diameter in order to encircle the slotted sleeve which in turn encircles the end of the magneto shaft.

Dated this 25th day of March, 1927.

W. P. THOMPSON & Co.,

Gough Chambers, Savile Street, Hull, and

12, Church Street, Liverpool,  
Chartered & Registered Patent Agents.

**COMPLETE SPECIFICATION.**

**Improvements relating to Shaft Couplings.**

I, ARCHIBALD JAMES WOODWARD, of 1, Crystal Street, City and County of Kingston-upon-Hull, a British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to shaft couplings and is particularly applicable [Price 1/-]

to the coupling of a magneto shaft with its driving shaft in internal combustion engines of the type in which the driving shaft for the magneto and the magneto shaft itself are connected together by means of a sleeve, the longitudinal or axial displacement of which, relative to one shaft, causes an angular displacement of the other shaft.

A coupling of this type is known com-

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prising a sleeve mutually engaging the helically threaded ends of driving and driven shaft or a splined end on one shaft and a helically threaded end on the other shaft and axially displaceable to vary their phase relationship.

An object of the present invention is to provide a simple device, cheap of construction which is readily applicable to existing magneto drives of internal combustion engines. It comprises an internally coned sleeve adapted to be rigidly secured to one shaft, and two coaxial sleeves fitting one over the other, one of which is fastened to the other shaft and has a helical thread or helical slot engagement with the other coaxial sleeve which is keyed to move also purely axially of the first mentioned coned sleeve. This device has the advantage that the magneto shaft can be coupled to the sleeve in any desired angular position whatever as desired as is indeed usual in ordinary magneto couplings and yet the ignition may be advanced or retarded without affecting the position of break of the magneto contact breaker relatively to the armature.

The invention is more particularly described with reference to the accompanying drawings in which:—

Figure 1 is an elevation partly in section of one form of construction.

Figure 2 is a corresponding plan view of Figure 1.

Figure 3 is an end view of Figure 1.

Figure 4 is a view of a modification.

Figure 5 is a section through A—A of Figure 4.

Figure 6 is a section of a further modification.

Figure 7 is a view in plan or elevation of a still further modification.

Figure 8 is a section on the line B—B of Figure 7.

In the construction according to Figs. 1—3 a sleeve 11 is adapted to encircle sleeves or bosses 12 and 13 on a pair of shafts 14 and 15 respectively. In the case of a coupling for a magneto either of the shafts, 14, 15, may be the magneto shaft and the other the driving shaft for this. Preferably the shaft 14 is the magneto shaft and 15 the driving shaft.

The boss 12 is mounted on the magneto shaft 14 by means of a tapered recess within which a tapered end of the shaft 14 engages, such tapered end being held rigidly within the tapered recess in the boss 12 by means of a nut. A similar construction may be adopted for connecting the boss 13 on the driving shaft 15. The boss 12 is provided with a key 16 or axial spline engaging within the corresponding groove 17 in the sleeve 11,

whereby the sleeve 11 may be longitudinally displaced relatively to the boss 12. The boss 13 on the driving shaft 15 is provided on its periphery with a pin, stud or projection 18 which is adapted to engage within a slot 19 in the sleeve 11, such slot being inclined, as shown in Fig. 2, to the axis of the sleeve. It will thus be seen that by the longitudinal displacement of the sleeve 11 relatively to the boss 12 of the magneto shaft 14 an angular relative displacement of the driving shaft 15 is thereby effected, the relative angular displacement of the two shafts 14 and 15 thereby being adjusted to a degree commensurate with the longitudinal displacement of the sleeve 11.

The longitudinal displacement of the sleeve 11 is effected by means of a lever 20 having a bifurcated portion 21 adapted to engage within a groove 22 of the sleeve. This lever 20 may be operated by any suitable link motion, Bowden wire or the like means from a hand control situated at the steering wheel of a vehicle. In the case of magneto couplings the desired amount of relative displacement of the two shafts is not large, the maximum end positions of the pin 18 being shown at 23 and 24 in Fig. 3.

In a modified form of construction as shown in Figs. 4 and 5, the shaft 15 is provided with a sleeve or boss 25 which is adapted to encircle the sleeve 11 whilst the pin 18 projects inwardly of such boss instead of outwardly as in Fig. 1, otherwise the construction is similar to that shown in Figs. 1—3.

In a modified form of construction shown in Fig. 6 a helical spline 26 and corresponding groove 27 are provided on the boss 25 and sleeve 11 to replace the pin 18 and slot 19 shown in the previous constructions.

In the construction according to Figs. 7 and 8 a plurality of splines 26 are shown. Such a construction would be particularly suitable in the case where the coupling is made of material other than metal, for example, fibre or cable tyre rubber.

It is not desired to limit the material of which the coupling may be made to metal, fibre or rubber as numerous other materials may be used.

As a result of the construction according to the present invention, the cam of the magneto is enabled to remain stationary whereby the magneto is adapted to discharge its spark at the most intense point of the armature resulting in the maximum efficiency of the magneto.

Having now particularly described and ascertained the nature of my said inven-

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tion and in what manner the same is to be performed, I declare that what I claim is:—

1. A shaft coupling in which one shaft  
5 has adapted to be secured to it an internally coned sleeve while to the other is secured one of two coaxial sleeves which  
mutually engage together by means of  
helical threading or pin and helical slot  
10 whilst the other sleeve is keyed to move  
also purely axially of the first mentioned  
coned sleeve substantially as described.

2. A shaft coupling particularly suitable for magnetos constructed and arranged to operate substantially as described with reference to the accompanying drawings. 15

Dated this 3rd day of May, 1927.

W. P. THOMPSON & Co.,  
Gough Chambers, Savile Street, Hull,  
and

12, Church Street, Liverpool.  
Chartered & Registered Patent Agents.

[This drawing is a reproduction of the Original on a reduced scale.]

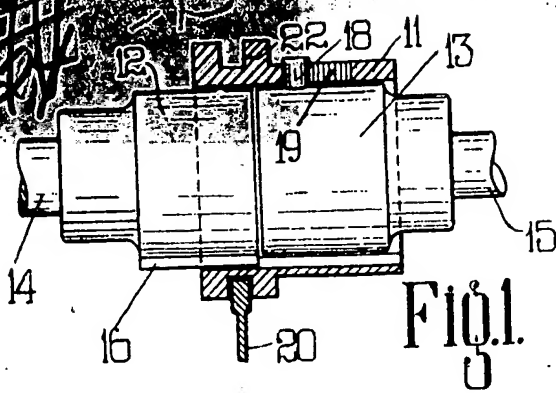


FIG. 1.

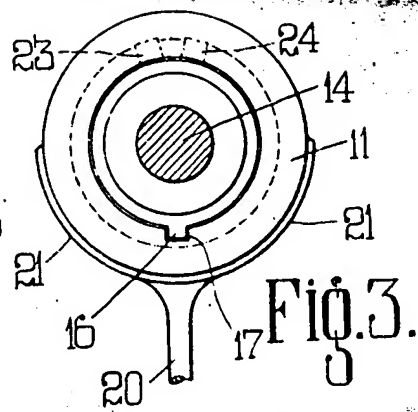


FIG. 3.

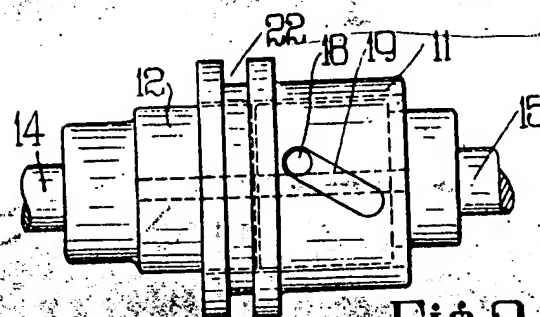


FIG. 2.

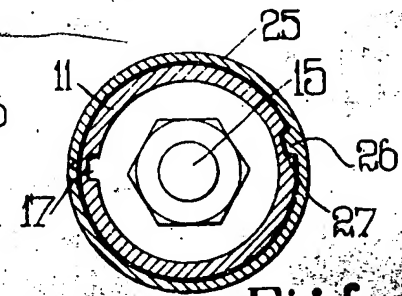


FIG. 6.

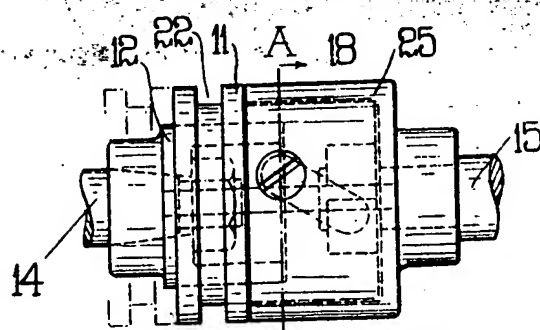


FIG. 4.

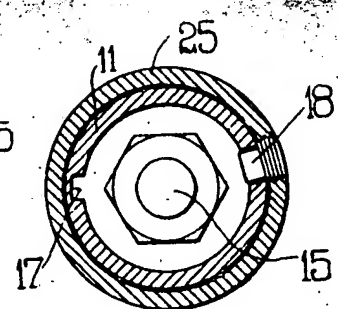


FIG. 5.

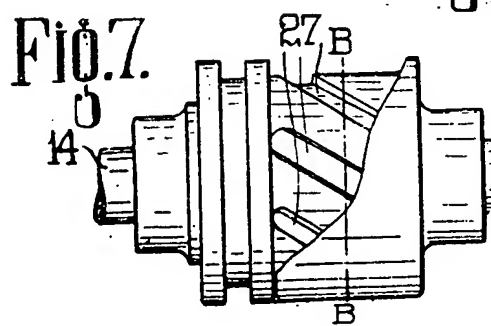


FIG. 7.

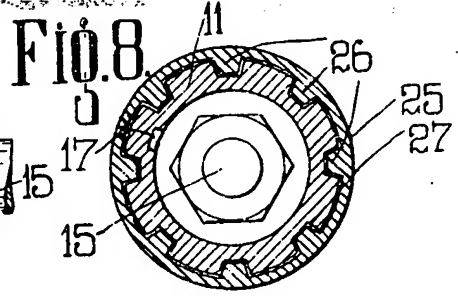


FIG. 8.

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